WHAT IS CLAIMED IS:

1. A parking brake system for applying braking force to wheels of a vehicle, the parking brake system including at least two independent brake system sections, each associated with one of the wheels, each of the brake system sections comprising:

a motor;

a parking brake, driven by the motor, for applying braking force to the associated wheel;

a detector for detecting an operation state of the parking brake; and

a controller for determining a drive command that is to be output to the motor in accordance with the operation state detected by the detector, the controller detecting the operation state of the parking brake in the other brake system section through the detector of the other brake system section, assuming the drive command that is to be output from the controller of the other brake system section, detecting the drive command actually output from the controller of the other brake system section, and comparing the actually detected drive command with the assumed drive command to determine abnormality of the other brake system section.

2. The parking brake system according to claim 1, wherein the controller of each brake system section determines that the other brake system section is abnormal when the detected drive command does not match the assumed drive command.

3. The parking brake system according to claim 1, wherein each brake system section includes a correction unit

for correcting an inappropriate drive command, the controller of each brake system section sending a correction signal to the correction unit of the other brake system section when the detected drive command does not match the assumed drive command.

4. The parking brake system according to claim 3, wherein each correction unit includes an exclusive OR circuit, the drive command output from the controller of the brake system section to which the correction unit belongs and the correction signal output from the controller of the other brake system section being input to the exclusive OR circuit.

5. The parking brake system according to claim 2, further comprising a host control unit for sending a brake command signal to each controller, the brake command signals being output in parallel, wherein each controller sends an abnormality detection signal to the host control unit when the detected drive command does not match the assumed drive command.

6. The parking brake system according to claim 5, wherein the host control unit determines that one of the controllers is abnormal when the abnormality detection signal indicating that said controller is abnormal is received and there is no response from said controller.

7. The paring brake system according to claim 5, further comprising:

a vehicle state detector for detecting the state of the vehicle, wherein the host control unit determines the brake command signal that is to be sent to each controller based

on the detected vehicle state.

8. The parking brake system according to claim 7, wherein the vehicle state detector is one of a plurality of vehicle state detectors, each detecting different conditions of the vehicle, and the host control unit uses one or a combination of two or more vehicle conditions selected from the detected vehicle conditions to determine the brake command signal.

9. The parking brake system according to claim 1, further including a host control unit for sending a brake command signal to each controller, each brake system section further comprising:

a rotation sensor for detecting a rotation state of the motor;

a current sensor for detecting the amount of current supplied to the motor; and

an electric path through which current supplied to the motor flows, each controller detecting abnormality of at least one of the parking brake, the electric path, the rotation sensor, and the current sensor of the braking system section to which the controller belongs based on at least one of the brake command signal, the detected rotation state, the detected current amount, and the elapsed time from when the motor is activated.

10. The parking brake system according to claim 9, wherein each controller determines that there is a wire breakage in the motor or the electric path when the detected current amount is less than a predetermined first current threshold value and the signal received from the rotation sensor does not change, the first current threshold value

being determined using the amount of current supplied to the motor when the motor is operated at a constant rotation speed as a criterion.

11. The parking brake system according to claim 9, wherein each controller determines that there is a short circuit in the motor or the electric path when the detected current amount is greater than a predetermined second threshold current value, the second threshold value being determined using the amount of current supplied to the motor when the motor is operated in a state in which rotation is constrained.

12. The parking brake system according to claim 9, wherein each controller determines that the current sensor is abnormal when the elapsed time is less than a predetermined first time threshold value, the detected current amount is less that a predetermined first current threshold value, and the signal received from the rotation sensor changes, the first time threshold value being determined using the time from when the motor is activated to when the motor reaches a constant rotation speed as a criterion, the first current threshold value being determined using the amount of current supplied to the motor when the motor is operated at a constant rotation speed as a criterion.

13. The parking brake system according to claim 9, wherein each controller determines that there is an abnormality causing the motor to be operated in a state in which rotation is constrained when the elapsed time is less than a predetermined first time threshold value, the detected current value is greater than a predetermined third

current threshold value, and the signal received from the rotation sensor does not change, the first time threshold value being determined using the time from when the motor is activated to when the motor reaches a constant rotation speed as a criterion, and the third current threshold value being determined using the amount of current supplied to the motor when the motor is operated in a state in which rotation is constrained.

14. The parking brake system according to claim 9, wherein each controller determines that the motor is idling when the elapsed time is less than a predetermined second time threshold value, the detected current value is less than a predetermined third threshold value, and the signal received from the rotation sensor changes, the second time threshold value being determined using the time from when the motor is activated to when braking is completed as a criterion, and the third current threshold value being determined using the amount of current supplied to the motor when the motor is operated in a state in which rotation is constrained.

15. The parking brake system according to claim 9, wherein each controller determines that a reverse rotation abnormality has occurred in the parking brake when the elapsed time is less than a predetermined third time threshold value and the signal received from the rotation sensor changes, and the third time threshold value being determined using the time from when the motor is activated to when the braking is released.

16. The parking brake system according to claim 9, wherein each parking brake includes a rotor, integrally

rotated with the associated wheel, and a friction member, moved toward or away from the rotor by operating the motor in a forward direction or a reverse direction, wherein each controller assumes a movement distance of the friction member based an a rotation amount of the motor and determines that excessive reverse rotation has occurred in the parking brake when receiving a brake release signal from the host control unit, the assumed movement distance has not reached a predetermined value that is the distance in which the brake release should be completed, and the signal received from the rotation sensor does not change.

17. The parking brake system according to claim 9, wherein each controller determines that the rotation sensor that does not output a signal that changes is abnormal when the elapsed time is less that a predetermined first time threshold value, the detected current amount is greater than a predetermined first current threshold value, and the signal received from the rotation sensor does not change, the first current threshold value being determined using the amount of current supplied to the motor when the motor is operated at a constant rotation speed as a criterion.

18. The parking brake system according to claim 9, wherein each controller sends an abnormality detection signal to the host control unit when detecting the abnormality.

19. A parking brake system for applying braking force to a wheel of a vehicle, the brake system comprising:

a motor;

a parking brake, driven by the motor, for applying braking force to the wheel;

a rotation sensor for detecting a rotation condition of the motor;

a current sensor for detecting the amount of current supplied to the motor;

an electric path through which current supplied to the motor flows;

a host control unit for outputting a brake command signal; and

a controller for controlling activation of the parking brake based on the brake command signal, the controller detecting abnormality of at least one of the parking brake, the electric path, the rotation sensor, and the current sensor based on at least one of the brake command signal, the detected rotation state, the detected current amount, and the elapsed time from when the motor is activated.

20. The parking brake system according to claim 19, wherein the controller determines that there is a wire breakage in the motor or the electric path when the detected current amount is less than a predetermined first current threshold value and the signal received from the rotation sensor does not change, the first current threshold value being determined using the amount of current supplied to the motor when the motor is operated at a constant rotation speed as a criterion.

21. The parking brake system according to claim 19, wherein the controller determines that there is a short circuit in the motor or the electric path when the detected current amount is greater than a predetermined second threshold current value, the second threshold value being determined using the amount of current supplied to the motor when the motor is operated in a state in which rotation is

constrained.

22. The parking brake system according to claim 19, wherein the controller determines that the current sensor is abnormal when the elapsed time is less than a predetermined first time threshold value, the detected current amount is less than a predetermined first current threshold value, and the signal received from the rotation sensor changes, the first time threshold value being determined using the time from when the motor is activated to when the motor reaches a constant rotation speed as a criterion, the first current threshold value being determined using the amount of current supplied to the motor when the motor is operated at a constant rotation speed as a criterion.

23. The parking brake system according to claim 19, wherein the controller determines that there is an abnormality causing the motor to be operated in a state in which rotation is constrained when the elapsed time is less than a predetermined first time threshold value, the detected current value is greater than a predetermined third current threshold value, and the signal received from the rotation sensor does not change, the first time threshold value being determined using the time from when the motor is activated to when the motor reaches a constant rotation speed as a criterion, and the third current threshold value being determined using the amount of current supplied to the motor when the motor is operated in a state in which rotation is constrained.

24. The parking brake system according to claim 19, wherein the controller determines that the motor is idling when the elapsed time is less than a predetermined second

time threshold value, the detected current value is less than a predetermined third threshold value, and the signal received from the rotation sensor changes, the second time threshold value being determined using the time from when the motor is activated to when braking is completed as a criterion, and the third current threshold value being determined using the amount of current supplied to the motor when the motor is operated in a state in which rotation is constrained.

25. The parking brake system according to claim 19, wherein the controller determines that a reverse rotation abnormality has occurred in the parking brake when the elapsed time is less than a predetermined third time threshold value and the signal received from the rotation sensor changes, and the third time threshold value being determined using the time from when the motor is activated to when the braking is released.

26. The parking brake system according to claim 19, wherein the parking brake includes a rotor, integrally rotated with the wheel, and a friction member, moved toward or away from the rotor by operating the motor in a forward direction or a reverse direction, wherein each controller assumes a movement distance of the friction member based an a rotation amount of the motor and determines that excessive reverse rotation has occurred in the parking brake when receiving a brake release signal from the host control unit, the assumed movement distance has not reached a predetermined value that is the distance in which the brake release should be completed, and the signal received from the rotation sensor does not change.

27. The parking brake system according to claim 19, wherein the rotation sensor is one of a plurality of rotation sensors, and the controller determines that the rotation sensor that does not output a signal that changes is abnormal when the elapsed time is less that a predetermined first time threshold value, the detected current amount is greater than a predetermined first current threshold value, and the signal received from the rotation sensor does not change, the first current threshold value being determined using the amount of current supplied to the motor when the motor is operated at a constant rotation speed as a criterion.

28. The parking brake system according to claim 19, wherein the controller sends an abnormality detection signal to the host control unit when detecting the abnormality.